UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
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QUALITY ASSURANCE MEMORANDUM FOR INORGANIC CHEMICAL ANALYSES

DATE: August 24, 2010

TO: Jon Klemesrud, Project Manager
Office of Compliance and Enforcement, US EPA Region 10

From: Stephanie Le, Chemist
Office of Environmental Assessment, US EPA Region 10 Laboratory

SUBJECT: Quality Assurance Review of Seattle Iron and Metals samples
For Total Metals

Project Code: ESD-202A
Account Code: 1011B10P501E50C

CC: Dave Terpening, Inspector
Office of Compliance and Enforcement, US EPA Region 10

The following is a quality assurance review of the results of the analyses of 4 solid samples for Total Metals. These samples were submitted for the Seattle Iron and Metals Project. The analyses were performed by EPA chemists at the US EPA Region 10 Laboratory in Port Orchard, WA, following US EPA and Laboratory guidelines.

This review was conducted for the following samples:

10194000 10194001 10194002 10194003

Data Qualifications

Comments below refer to the quality control specifications outlined in the Laboratory's current Quality Assurance Manual, Standard Operating Procedures (SOPs) and the Quality Assurance Project Plan (QAPP). No excursions were required from the method Standard Operating Procedure.

All measures of quality control met Laboratory/QAPP criteria.

For those tests for which the USEPA Region 10 Laboratory has been accredited by the National Environmental Laboratory Accreditation Conference (NELAC), all requirements of the current NELAC Standard have been met.

1. Sample Transport and Receipt

Upon sample receipt, all conditions met Laboratory/QAPP requirements for this project.

2. Sample Holding Times

The concentration of an analyte in a sample or sample extract may increase or decrease over time depending on the nature of the analyte. For this reason, holding time limits are recommended for samples. The samples covered by this review met method holding time recommendations.

3. Sample Preparation

Samples were prepared according to the method outlined in the SOP for these analytes for this type of matrix. No qualification of the data was required based on sample preparation.

4. Initial Calibration and Calibration Verification

The calibration factors generated for the initial calibration met method criteria. All calibration verification checks met the frequency and recovery criteria on the day of analysis. No qualification was required based on calibration or calibration verification.

5. Laboratory Control Samples

All laboratory control sample results met the recovery acceptance criterion (85 – 115% of the standard's true value) for the method. No qualification was required based on laboratory control sample analysis.

6. Blank Analysis

The method blank did not contain detectable levels of analyte which would require data qualification.

7. Duplicate Analysis

Duplicate analysis was performed on sample 10194000. Sample results which were greater than the Low Range Standard level were within the ± 20% RPD requirement. No qualification was required based on duplicate analysis.

8. Matrix Spike/Matrix Spike Duplicate Analysis

Matrix spike analyses were performed on sample 10194000. Sample results were within the 75-125% recovery and relative percent difference (RPD) requirements. If the spike amount added is less than one quarter of the sample concentration, the recovery is reported "NA" and the results are not qualified. No other qualification was required based on matrix spike analyses.

9. Reference Materials

A reference material was prepared and analyzed with the Total Metals samples. Analytical values for this sample were within the range of acceptable results. No qualification was necessary based on analysis of the reference material.

10. Interferences

These samples contained high levels of metals, many of which caused interferences of various kinds. Many of these interferences had to be addressed by analyzing the samples at a dilution.

11. Reporting Limits

All sample results that fall below the MRL are assigned the value of the MRL and the 'U' qualifier is attached.

12. Data Qualifiers

The U qualifier was attached to results below the reporting limit.

Below are the definitions for the codes used qualifying data from these analyses. When more than one quality issue was involved, the most restrictive qualifier has been attached to the data.

U - The analyte was not detected at or above the reported value.

NA - Not Applicable; the parameter was not included in the analysis, or there is no analytical result for this parameter. No value is reported with this qualification.

The usefulness of qualified data should be treated according to the severity of the qualifier in light of the project's data quality objectives. Should questions arise regarding the data, contact Katie Adams at the Region 10 Laboratory, phone number (360) 871- 8748.

13. Definitions

Accuracy - the degree of conformity of a measured or calculated quantity to its actual value.

Duplicate Analysis – when a duplicate of a sample (DS), a matrix spike (MSD), or a laboratory control sample (LCSD) is analyzed, it is possible to use the comparison of the results in terms of relative percent difference (RPD) to calculate precision.

Laboratory Control Sample (LCS) - a clean matrix spiked with known quantities of analytes. The LCS is processed with samples through every step of preparation and analysis. Measuring percent recovery of each analyte in the LCS provides a measurement of accuracy for the analyte in the project samples. A laboratory control sample is prepared and analyzed at a frequency no less than one for every 20 project samples.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) - Sample analyses performed to provide information about the effect of the sample matrix on analyte recovery and measurement within the project samples. To create the MS/MSD, a project sample is spiked with known quantities of analytes and the percent recoveries of the analytes are determined.

Method Blank- An analytical control that is carried through the entire analytical procedure. The method blank is used to define the level of laboratory background and reagent contamination. A method blank is prepared and analyzed for every batch of samples at a minimum frequency of one per every 20 samples. To produce unqualified data, the result of the method blank analysis is required to be less than the MRL and less than 10 times the amount of analyte found in any project sample.

Minimum Reporting Level (MRL) - the smallest measured concentration of a substance that can be reliably measured using a given analytical method.

Precision – the degree of mutual agreement or repeatability among a series of individual results.

Reference materials – Samples with analyte values that are homogeneous and well established. This allows the reference material to be used to assess the accuracy of the measurement method.

Relative Percent Difference – The difference between two sample results divided by their mean and expressed as a percentage.